

## ESS 102 Math Assessment

**AVE Score: 62.0 Std Dev: 25**

This is for helping me and my TAs understand where everyone is coming from. NO CALCULATORS. No name needed.

Your High School: \_\_\_\_\_ City and State of you High School: \_\_\_\_\_

Intended Major: \_\_\_\_\_ Date and name of last math class: \_\_\_\_\_

### 1. Arithmetic

a.  $\frac{10}{0.1} = \frac{10}{0.1} \left(\frac{10}{10}\right) = \frac{100}{1} = 100$  [77%]

b.  $2^3 = 2 \times 2 \times 2 = 8$  [98%]

c.  $64^{1/2} = \sqrt{64} = 8$  (since  $8 \times 8 = 64$ ) [65%]

d.  $2^{-2} = \frac{1}{2^2} = \frac{1}{4}$  or 0.25 (either is fine) [50%]

e.  $\frac{25 \times 10^3}{5 \times 10^{-5}} = \frac{25}{5} \times \frac{10^3}{10^{-5}} = 5 \times 10^{3-(-5)} = 5 \times 10^8$  [32%]

f.  $\frac{231}{7} =$  (No Calculator. to tenths place) 33.0 [76%]

### 2. Express in Scientific Notation:

a.  $0.00012 = 1.2 \times 10^{-4}$  (moving the decimal four spaces to the right means we have to multiply by 0.0001 or  $10^{-4}$ ) [74%]

b.  $300,000 = 3 \times 10^5$  (moving the decimal point five space to the left means we have to multiply by 100,000 or  $10^5$ ) [81%]

### 3. Geometry

a. What is the formula for the circumference of a circle? [59%]

$$C = 2\pi r = \pi d$$

b. What is the formula for the volume of a sphere? [25%]

$$V = \frac{4}{3}\pi r^3$$

### 4. Algebra

a.  $PV = NkT$  (Solve for T in terms of P, V, N, and k) [84%]

Divide both sides by Nk

$$\frac{PV}{Nk} = \frac{NkT}{Nk}$$

$$\frac{PV}{Nk} = T$$

b.  $y = \frac{x}{x-1}$  (Solve for x)

[16%]

Multiply both sides by x-1

$$y(x - 1) = x$$

Distribute the y

$$yx - y = x$$

Bring all x terms to one side of the equation by subtracting yx from both sides

$$-y = x - yx$$

Factor out the x from the right hand side

$$-y = x(1 - y)$$

Divide both sides by (1-y)

$$x = \frac{-y}{(1 - y)}$$

Optional last step: multiply top and bottom by -1

$$x = \frac{y}{(y - 1)}$$

c.  $\frac{a}{x} = \frac{b}{c}$  (Solve for x in terms of a, b, and c)

[71%]

Multiply both sides by x

$$a = \frac{xb}{c}$$

Multiply both sides by c

$$ac = bx$$

Divide both sides by b

$$x = \frac{ac}{b}$$

**Course Makeup:**

Freshmen:	50%	Humanities:	10.8%
Sophomores:	22.5%	Sciences:	23.5%
Juniors:	15.4%	Engineering:	18%
Seniors:	10.7%	Social Sciences:	28%
Other:	1.4%	Business:	7.6%
		Undeclared:	12.1%